

ENDANGERED SPECIES PROGRAM – GREAT LAKES SHORELINE PROJECT

E-15  
AMENDMENT 2

COOPERATIVE ENDANGERED SPECIES CONSERVATION FUND

GRANT PROPOSAL AMENDMENT  
FOR THE PERIOD: SEPTEMBER 26, 2004 THROUGH MARCH 31, 2008

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

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PROJECT STATEMENT: Great Lakes shoreline prioritization, protection, and management for threatened and endangered species in Michigan and Illinois.

#### SUMMARY:

This amendment serves to add the third and final year of funding to this previously approved multi-year grant. Consequently, this amendment also serves to extend the grant proposal period through March 31, 2008. All other aspects of this grant proposal remain as they were previously approved. This project seeks to identify and prioritize protection efforts along the Great Lakes shoreline for multiple species and to develop and test strategies to protect coastal areas where listed species are concentrated in Michigan. The project also seeks to continue ongoing piping plover recovery efforts that have been funded using Section 6 (MI-E-6) monies in the past and expand monitoring and protection efforts in Illinois. With this effort, we hope to integrate multi-species protection with the piping plover program.

#### NEED:

Great Lakes shorelines are home to approximately 30% of the globally significant natural features that occur in the Great Lakes basin and they harbor several species endemic to the region (The Nature Conservancy [TNC] 1994). These Great Lakes shoreline-associated communities include such species as: the Federally endangered Great Lakes piping plover (*Charadrius melodus*), Hine's emerald dragonfly (*Somatochlora hineana*), and Michigan monkey flower (*Mimulus glabratus* var *michiganensis*); the Federally threatened Pitcher's thistle (*Cirsium pitcheri*), lakeside daisy (*Hymenoxys herbacea*), dwarf lake iris (*Iris lacustris*), and Houghton's goldenrod (*Solidago houghtonii*); and the State-threatened Lake Huron tansy (*Tanacetum huronense*), Lake Huron locust (*Trimerotropis huroniana*), prairie dunewort (*Botrychium campestre*) and moonwort (*Botrychium acuminatum*). General community types for which these species are associated include dune, limestone/dolomite, and Great Lakes wetland communities (Michigan Natural Features Inventory [MNFI] 1999, Comer et al. 1997, Albert 2001). Because these community types are distributed patchily and occur in different configurations along the lakeshore and because species often exhibit some habitat plasticity, species associations are not discrete. Therefore Great Lakes shoreline-dependent species often exhibit multiple affinities to these community types (Table 1).

Table 1. Federally threatened and endangered species associations to Great Lakes shoreline community types.

	Piping plover	Pitcher's thistle	Houghton's goldenrod	Dwarf lake iris	Lakeside daisy	Hine's emerald	Michigan monkey-flower
Shoreline dunes	X	X	X	X			
Limestone/dolomite shoreline			X	X	X	X	

Great Lakes wetlands	X		X			X	X
Shoreline-forests				X			X

Development is the most significant threat to biodiversity in Michigan and in the Great Lakes region (TNC 2000). Great Lakes shoreline communities are particularly susceptible because they are appealing development areas (Olson and Soule 1998). Habitat loss, degradation and fragmentation due to shoreline development are the primary threats to six of the seven federally-listed Great Lakes shoreline-dependent species (MNFI 1996, Cuthrell 1999, Higman and Penskar 1999, Hyde 1999, Penskar et al. 2001, Penskar and Higman 2001). The high concentration of rare species and the rate and intensity of development make it critical that strategies to protect and restore these areas are as efficient and effective as possible to ensure successful protection. Intensive recreational activities, which are frequently associated with development, are also a major threat to several of these species. Strategies developed to abate these threats can benefit multiple species at a site and can be used at other locations and for other species.

Great Lakes shoreline-associated threatened and endangered species occur across a broad expanse of shoreline within Michigan, including shoreline along Lakes Michigan, Superior, and Huron on both public and privately owned land. Protection and recovery needs are complex and include a combination of interagency cooperation, partnerships with private entities, and public education.

To date, most conservation efforts related to Great Lakes shorelines have related to general protection of Great Lakes shorelines and projects targeting specific species. Because conservation funding is limited, it would be highly beneficial to protect multiple species simultaneously and to maximize conservation efforts at specific locations. One approach to conserving multiple species is to build upon the success of the Great Lakes piping plover program. Piping plover nesting areas commonly provide habitat for other Federally-listed species such as Houghton's goldenrod and Pitcher's thistle (Wemmer 2000, Chapter 6), but can also be associated with dwarf lake iris, lakeside daisy, Hine's emerald dragonfly, and Michigan monkey-flower, depending upon the landscape configuration. Due to these associations, Wemmer (2000, chapter 6) determined that piping plover may be useful as an umbrella species for other Great Lakes shoreline listed species. Linking the efforts and success of the piping plover recovery program to protection and recovery efforts for other Great Lakes shoreline dependent threatened and endangered species would be an ecologically and fiscally sound approach to protecting critical Great Lakes shoreline communities.

The Piping plover program has significantly increased plover populations in the Great Lakes region through an intensive effort that includes monitoring, protection, management, public education, and inter-agency cooperation. In the last five years alone there has been a 208% increase in nesting pairs and a 226% increase in the number of fledglings documented by the program. Plovers have expanded their nesting locations to include two locations in Wisconsin (in 2001) and Tawas and Ludington State Parks in Michigan; areas where plovers have not nested for decades. Continued expansion of plover nesting sites within Michigan and into other states is important because all of the 50 nesting pairs observed in 2003 occurred in Michigan (Stucker et al. 2003) and the long-term goal for the Great Lakes includes 50 nesting pairs outside

of Michigan (USFWS 2003b). As plover populations in the Great Lakes increase, so does the likelihood that plovers will return to previous nesting areas in other states. Efforts to monitor plovers in other Great Lakes states have and should continue to increase. During the 2003 breeding season, Illinois began to systematically search for piping plover in designated critical habitat in Illinois, where they have not nested since 1973, to determine stopover use and monitor for potential nesting behavior.

Despite substantial improvements, Great Lakes plovers remain critically endangered. A recent population viability analysis for the Great Lakes population found that the population will not persist without continued increases in nesting success, reproductive success, and appropriate habitat (Wemmer et al. 2001). These results suggest that current efforts to increase nesting and reproductive success must be sustained and even increased in future years to increase the likelihood of recovery and reduce the likelihood that stochastic events will lead to extirpation of the Great Lakes population. Protection efforts targeting other species may further increase protection in unoccupied critical habitat.

Integrating the interagency coordination and public education approaches of the plover program into a larger effort to protect multiple species at critical locations will greatly increase the potential for recovery for other listed species. Protection efforts and appropriate management can help to maximize healthy populations on public lands. Education and partnerships with private stakeholders can help to halt or reduce destruction of critical areas on private lands. The high cost of Great Lakes shoreline property generally precludes resource agency purchase of critical areas. One method to overcome this obstacle and ensure long-term protection on private land is to establish long-term relationships with landowners and assist them in developing and implementing habitat protection measures. Recovery of these species will require protection in critical areas through long-term agreements or conservation easements with private property owners and property managers. Efforts to develop these partnerships can lay the groundwork for potential future efforts to develop a Habitat Conservation Plan to protect federally listed species associated with Great Lakes shorelines.

## **OBJECTIVES:**

Each objective addresses expert's priorities outlined in Expected Results and Benefits section below. Priorities addressed [in full or in part] are listed in parentheses.

### **Objective 1. Threatened and Endangered species concentration analyses.**

Identify areas that support concentrations of threatened and endangered species (hereafter also called "species concentrations") along Great Lakes shorelines in Michigan. Support concentrations of threatened and endangered species (hereafter also called "species concentrations") along Great Lakes shorelines in Michigan and correlate these areas to land ownership and geo-ecological landscape features. Species concentrations will also be ranked based on number and quality of occurrences and correlated with plover designated critical habitat and nesting sites. Results from the analyses will be summarized in a report that will also discuss site-specific land ownership, threats, and potential conservation strategies. (Expert identified priority activity A-4, B-1, B-3, C-1; Recovery plan task C-1, E-6).

## **Objective 2. Surveys and monitoring – Michigan.**

Survey and monitor piping plovers in Michigan in order to evaluate arrival dates, nesting chronology, clutch size, hatch rates, specific protection needs, and factors limiting productivity. Survey threatened and endangered plants at potential species concentration areas (Hine's emerald dragonfly surveys are already currently planned for 04 & 05) to verify the status, extent, and quality of occurrences for species concentration assessment and for management recommendations. (Expert identified priority activity A-1, C-2, G-1; Recovery plan task A-1, C-2, D-2, E-2).

## **Objective 3. Surveys and monitoring – Illinois.**

Survey and monitor plovers in critical piping plover habitat in Illinois. These efforts will concentrate on documenting stopover sites and working with volunteers and the public to limit access at these locations to encourage nesting. If nesting does occur, nesting areas will be protected from human disturbance and predator exclosures will be placed over nests. (Expert identified priority activity A-1, A-3, A-4; Recovery plan task A-1, A-3, A-5).

## **Objective 4. Site protection & management.**

Protect all active plover nests during the breeding season in order to enhance productivity of eggs, hatchlings, and fledglings to the extent possible. (Recovery plan task A-1; expert identified priority activity A-1).

## **Objective 5. Site Conservation Planning.**

Conduct a pilot project at one (or more) species concentration area(s) to develop a site conservation plan in partnership with at least one landholding public agency (e.g. MDNR-Forest, Minerals and Fire Management) and at least one local government or private landholding entity (e.g. township, homeowners association, citizens group, industry). (Expert identified priority activity A-3, A-4, B-3, C-1, C-3, D-1, E-2, E-3, F-3, G-1; Recovery plan task A-5, B-1, B-5, C-1, C-3, D-1, E-1, E-3, E-6, F-4).

## **Objective 6. Information & education.**

Provide public information and educational materials on threatened and endangered shoreline species at species concentration areas and plover nest sites in order to gain support for shoreline protection and management. Contact landowners who have nesting plovers on their property or potential nesting habitat to help gain long-term protection for piping plovers. When plover nest sites coincide with species concentrations, inform the landowner of these species, their locations, their habitat, and their protection and management needs. Establish and maintain active interagency relationships to facilitate timely coordination and communication between all groups involved with shoreline protection and management efforts. (Expert identified priority activity A-3, A-4, C-3, E-3, G-2; Recovery plan task A-5, B-5, C-3, E-3).

## **EXPECTED RESULTS OR BENEFITS:**

Priorities addressed (fully or partially) in this proposal are identified in the *Section 6 Species' Priority Activities for Listed, Proposed, Candidate & "Near Candidate" Species* (FY 2002 to FY 2007) (U. S. Fish and Wildlife Service [USFWS] 2003a) and in species recovery plans (USFWS 1990, 1997a, 1997b, 2001a, 2002, 2003b).

**From Section 6 Species' Priority Activities (USFWS 2003a):**

**A. Piping Plover (*Charadrius melodus*):**

1. Locate nesting pairs, place predator exclosures over all nests, post and control human activities on all nesting beaches, and monitor hatching success and reproductive success to fledgling at all nest sites.
3. Develop active communication/education links with appropriate people at sites in GL where potential habitat exists that is being used (for example, biologists/naturalists at Ludington, Tawas and Muskegon State Parks, Indiana Dunes National Lakeshore, Illinois Beach State Park, etc.). Land managers/owners should be alerted to the fact that the population is growing and pair may attempt to nest on their land.
4. Coastal planning and community education.

**B. Hine's Emerald Dragonfly (*Somatochlora hineana*)**

1. Larval surveys and larval life-history, ecological, and habitat studies for sites in Illinois, Michigan, Missouri and Wisconsin.
3. Hydrogeological studies for extant sites in Illinois, Michigan, Missouri, and Wisconsin to determine the nature of apparent impacts to the hydrology that may be caused by nearby development activities. Determine restoration and/or protection strategies to counteract changes or prevent further impacts.

**C. Houghton's goldenrod (*Solidago houghtonii*)**

1. Protect all known occurrences, with priority to the highest ranking sites.
2. Conduct field surveys to locate new occurrences and verify known sites.
3. Educate land managers and the public.

**D. Michigan Monkey Flower (*Mimulus glabratus* var. *michiganensis*)**

1. Protect the 14 known extant populations.

**E. Pitcher's thistle (*Cirsium pitcheri*)**

1. Conduct those actions (specified in the draft Federal recovery plan) that legally protect populations and their habitats.
2. Ensure appropriate management of protected occurrences (especially for public land managers).

3. Develop and continue landowner contact activities to educate public land managers and private landowners.

**F. Lakeside daisy (*Hymenoxys herbacea*)**

3. Provide necessary management at all protected sites; develop and implement management plans and/or agreements for the Illinois, Michigan, and at least two of the Ohio sites (Lakeside Daisy State Nature Preserve and Kelleys Island State Park) (prevent Significant Decline of Texon-#4 in recovery plan).

**G. Dwarf Lake Iris (*Iris lacustris*)**

1. Identify and protect the largest, highest quality occurrences to maintain self-sustaining population in representative habitats and ecoregions.
2. Develop and continue education program for both public land managers and private landowners to help maintain dwarf lake iris and associated rare species within sustainable communities/local ecosystems.

**Recovery Plan Tasks:**

**A. Piping plover (USFWS 2003b)**

Task 1.1: Coordinate survey, monitoring, and management efforts in breeding range.

Task 3: Identify and protect migration habitat outside of wintering range.

Task 5: Develop and implement public education and outreach.

**B. Hine's emerald dragonfly (USFWS 2001a)**

Task 1: Protect and manage extant populations

Task 5: Conduct an information and education program

**C. Houghton's goldenrod (USFWS 1997a)**

Task 1: Protect all known occurrences, placing priority on achieving effective protection for the highest ranking occurrences and essential habitat.

Task 2: Conduct field surveys to determine possible new occurrences and verify the status and extent of known occurrences.

Task 3: Educate land managers and the public

**D. Michigan Monkey Flower (USFWS 1997b)**

Task 1: Enact long-term protection for all known existing occurrences, with primary emphasis on the preservation of essential habitat.



- Task 2: Conduct field surveys for new occurrences and to determine the specific status of recently discovered and historical sites.

E. Pitcher's thistle (USFWS 2002)

- Task 1: Protect and manage known occurrences and essential habitat, giving priority to essential habitat.
- Task 2: Establish and conduct ongoing field surveys to verify known and record new occurrences.
- Task 3: Inform the public, recreationists, public land managers, and private landowners.
- Task 6: Conduct research necessary for protection, management, and restoration.

F. Lakeside daisy (USFWS 1990)

- Task 4: Provide necessary management at all protected sites.

This project will: 1) identify areas that support concentrations of Great Lakes shoreline associated threatened and endangered species in Michigan, 2) help to prioritize current and future conservation activities (e.g. outreach, management, acquisition) on both private and public lands, 3) relate plover critical habitat and nesting locations to concentrations of Great Lakes threatened and endangered species, and 4) test several strategies to protect important focal areas on both public and private land. Results from these efforts will be indispensable in potential future efforts to develop a multi-species Great Lakes shoreline Habitat Conservation Plan

The project will also: 1) determine current plover habitat use, population levels, and productivity, 2) provide protection for nesting piping plovers using nest enclosures and on-site presence by paid personnel, stewards, and volunteers, 3) enhance coordination among all agencies working on plover recovery to maximize these efforts, 4) expand plover recovery efforts to critical habitat in Illinois, 5) integrate a more comprehensive multi-species approach into efforts to recover piping plover and 6) help increase public awareness of Great Lakes shoreline threatened and endangered species and efforts to protect them.

Together, these efforts will continue to protect plovers, enhance productivity, and increase our knowledge of the Great Lakes population, but it will also integrate multi-species protection into the piping plover program and provide more comprehensive strategies to protect Great Lakes shoreline associated threatened and endangered species. Because of the size and intensity of the plover program, integrating a multi-species approach into the program will greatly increase efforts to protect other Great Lakes shoreline threatened and endangered species.

Only an informed and educated public can help support and provide long-term protection for Great Lakes threatened and endangered species, particularly in light of increased private shoreline development and increased use of public lands. Protection of critical species concentrations and the educational efforts directed at helping local residents understand and appreciate their unique surroundings will benefit the preservation and protection of a significant part of the Great Lakes shoreline.

## **APPROACH:**

### **Objective 1. Threatened and Endangered species concentration analyses.**

The Michigan Natural Features Inventory database will be used to identify significant concentrations of threatened and endangered species along Great Lakes shorelines in Michigan and will include separate assessments for public and private lands. Delineating between public and private lands will help to determine the extent of significant species concentrations that fall within "protected areas" and areas susceptible to development (ownership by land conservancies will be noted and considered protected areas). Significant species concentrations will also be ranked based on the number and quality of occurrences. This effort will also help to define site-specific management strategies.

Species concentrations will be correlated with geo-ecological landscape configurations and with plover designated critical habitat and nesting sites. This analysis will determine which species could receive significant protection if plover areas were managed and protected for all threatened and endangered species. This analysis will complement efforts recently undertaken to develop a spatial database of piping plover critical habitat units (Jack Dingledine, USFWS, personal communication).

Results from the concentration analysis will be summarized in a report that will also discuss site-specific land ownership, threats, and potential conservation strategies at significant species concentration areas. The plan will generally characterize areas where these species concentrations occur and will integrate, develop, and discuss strategies to protect these concentrations on public and private lands. The plan will also recognize any species that do not generally occur in concentrations with other Great Lakes shoreline species, and subsequently may not receive significant protection through a multi-species approach.

### **Objective 2. Surveys and monitoring – Michigan.**

Surveys for threatened and endangered Great Lakes shoreline associated plant species will be conducted to confirm old records and verify the status and quality of occurrences. These efforts will help to clarify whether some sites qualify as a significant species concentration area and will be helpful in determining site-specific management recommendations.

We will work with partners (USFWS-East Lansing Field Office, University of Minnesota, National Park Service, other MDNR divisions, U.S. Forest Service, volunteers) to coordinate and implement a statewide census of piping plovers in Michigan, including areas where plovers have not nested in recent years. We will communicate with and request that field biologists and other knowledgeable people report sightings of piping plovers. We will coordinate volunteers and implement monitoring efforts on state-owned lands in Michigan throughout the nesting season. Arrival dates, nesting chronology, clutch size, hatch rates, fledge rates, specific protection needs, and factors limiting productivity will be determined. Nests will be monitored daily, if possible, or at least twice a week at remote locations. Established Fish and Wildlife Service protocols will be followed and all activities will be conducted in a manner that minimizes the disturbance and

risk to piping plovers. Only personnel attending Fish and Wildlife Service training sessions will oversee survey, monitoring, and protection efforts.

Surveys of critical piping plover habitat in Illinois will begin in mid April and continue until mid July. These will be conducted primarily by volunteers under coordination of the contractor who will be working closely with the IDNR and the USFWS, Barrington, IL Field Office. Birds will be closely monitored until they either disappear or manifest signs of nesting. If nesting does begin, a coordinated effort involving the contractor, departmental personnel, and volunteers will provide daily, or near daily, scrutiny for the duration of the nesting attempt. Determinations will be made of nesting chronology, clutch size, hatch rates, specific protection needs, and factors limiting productivity. Established protocols will be followed and all activities will be conducted in a manner that minimizes the disturbance and risk to piping plovers.

#### **Objective 4. Site protection & management.**

A pilot project will be conducted at one (or more) species concentration location(s). This will either be at a location with both public and private land ownership or two separate project locations; one with public land ownership and one with private land ownership. The goal will be to develop a site conservation plan with at least one landholding public agency (e.g. U.S. Forest Service, MDNR-Forest, Minerals and Fire Management) and at least one private landholding entity (e.g. homeowners association, citizens group, industry) that can be used as an example to protect other species concentration areas in the future. Public land strategies will include long-term agreements for comprehensive protection and management. Private land strategies will include targeted outreach and education and will work toward long-term agreements, conservation easements, or mitigation. Specific strategies will include providing information on the importance of intact shoreline areas to Michigan's economy and quality of life, and providing examples of local ordinances to protect shoreline areas. Efforts to develop these partnerships can lay the groundwork for potential future efforts to develop a Habitat Conservation Plan to protect Great Lakes shorelines.

A list of areas on state lands to close against entry during the plover nesting season will be updated and maintained and a Director's Land Use Order to close or restrict access to areas where plovers are nesting will be obtained. All active nests will be posted with closure signs and psychological fencing (stakes, twine, and signs) during the nesting season (May 1 to August 15). Other threatened and endangered species will be considered when closing off beaches to provide multi-species protection and to avoid the possibility that beach closures could reroute recreation traffic through habitat for other listed species. Predator exclosures will be deployed on all active nests following established Fish and Wildlife Service protocols. We will communicate with land managers or landowners to obtain permission to place closure signs and predator exclosures over nests on municipal, private, and federal lands.

We will coordinate plover protection and management efforts with the U.S. Fish and Wildlife Service East Lansing Field Office, the National Park Service (NPS), and the U.S. Forest Service on protection and management efforts in Michigan. We will coordinate steward and volunteer protection efforts with the Michigan Parks and Recreation Division in Wilderness, Leelanau, Ludington and Tawas state parks, and other parks as needed. Short-term workers will be hired to provide primary monitoring and protection efforts for most concentrated plover nesting areas on

state lands. These short-term workers will be trained to use proper monitoring and protection protocols (USFWS and MDNR 1999). All partners, volunteers, and short-term workers that are working on plover recovery efforts near significant species congregations will be informed of the need to integrate educational and management efforts for multi-species protection. We will coordinate with DNR Law Enforcement Division, park personnel, and volunteer stewards to provide extra protection and patrols for multi-species concentrations and for plover nesting beaches during Memorial Day and the Fourth-of-July holidays, and at critical sites where human disturbance has impacted plover nesting success in the past.

In Illinois, a list will be developed for areas on state lands requiring restricted entry during the nesting season. Post all active nests with closure signs and psychological/physical fencing (stakes, twine, signs, etc.) during the nesting season (May 1 to August 15). Land managers or landowners will be contacted to obtain permission to place closure signs and predator exclosures over nests on municipal, private, and federal land. We will also coordinate with IDNR Law Enforcement Division, park personnel, and volunteer stewards to provide extra protection and patrols on nesting beaches during Memorial Day and the Fourth-of-July holidays, and at critical sites where human disturbance may impact plover nesting success.

We will respond to an estimated 25 information requests and will review and provide recommendations on numerous (>>100) proposed projects or activities for their potential effects on Great Lakes shoreline threatened and endangered species (including ~15 for effects on nesting piping plovers).

#### **Objective 5. Site Conservation Planning.**

A pilot project will be conducted at one (or more) species concentration location(s). This will either be at a location with both public and private land ownership or two separate project locations; one with public land ownership and one with private land ownership. The goal will be to develop a site conservation plan with at least one landholding public agency (e.g. U.S. Forest Service, MDNR-Forest, Minerals and Fire Management) and at least one private landholding entity (e.g. homeowners association, citizens group, industry) that can be used as an example to protect other species concentration areas in the future. Public land strategies will include long-term agreements for comprehensive protection and management. Private land strategies will include targeted outreach and education and will work toward long-term agreements, conservation easements, or mitigation. Specific strategies will include providing information on the importance of intact shoreline areas to Michigan's economy and quality of life, and providing examples of local ordinances to protect shoreline areas. Efforts to develop these partnerships can lay the groundwork for potential future efforts to develop a Habitat Conservation Plan to protect Great Lakes shorelines.

#### **Objective 6. Information & education.**

Efforts to provide information to the public to help protect piping plover nest sites will continue. These coordinated efforts will be expanded to provide information on all Great Lakes shoreline-dependent threatened and endangered species, particularly where plover nests coincide with species concentrations.

Area closure signs, multi-species information signs, and plover informational signs will be printed and distributed. Information concerning Great Lakes shorelines, multi-species protection, and piping plover recovery activities will be printed (or reprinted) and distributed as needed. Program staff will contribute to interpretive programs and the Adventure Ranger Program at State Parks and other appropriate sites to help develop informational programs on protection of Great Lakes shoreline threatened and endangered species. At least one statewide public news release on the annual plover census results will be prepared and distributed.

Program staff will meet with the Michigan piping plover recovery team, agency land managers, researchers, and part-time personnel prior to the plover nesting season to coordinate and develop annual plover monitoring, management, and protection activities. When results become available, locations of significant multi-species concentrations will be reviewed at these meetings and participants will be asked to develop strategies to incorporate multi-species protection with plover recovery efforts. These groups will meet again after the nesting season to evaluate results. We will provide accurate and timely plover information to appropriate state agencies, U.S. Fish and Wildlife Service, U.S. Forest Service, National Park Service, and local governments, as needed.

Private landowners near active nesting sites will be contacted and provided information and educational materials. We will also provide advice, encouragement, and contact information for those landowners wishing to contribute to recovery efforts through active habitat conservation measures. If these landowners are located near other threatened or endangered species, they will be informed of their presence and encouraged to participate in habitat conservation measures. Private landowners that are not near active nest sites, but are near significant species congregations in piping plover critical habitat, will also be contacted, provided information, and encouraged to participate in habitat conservation measures. These contacts will provide a base for education and outreach efforts for significant species concentrations and will help to preserve areas for future plover nesting and population expansion.

In Illinois, at least one press release will be distributed informing the public of the piping plover recovery effort. At least one public program will be presented on the piping plover recovery project at Illinois Beach State Park. Public information materials will be displayed and/or distributed that describe piping plovers and efforts to preserve them.

#### **Timeline:**

##### **Year One**

OCT-JAN      Develop spatial criteria and design analyses for assessment of species concentrations along Great Lakes shorelines and begin analyses.

Evaluate and modify last season's piping plover survey, monitoring, and protection protocols; information materials; volunteer lists and materials and outreach efforts. Meet with piping plover recovery group to decide on priorities for upcoming season. Assess strategies to incorporate a multi-species approach into the plover program. Prepare materials for landowner contact.

**FEB-APR** Continue analyses of species concentrations and complete a preliminary assessment that will indicate potential problems with data. Use this preliminary assessment to determine field visits necessary to validate data and the analysis.

Begin contacting potential piping plover program volunteers and develop schedules for volunteer stewards and monitors. Meet with Michigan plover recovery group to map work strategies for upcoming field season, including efforts to integrate all threatened and endangered species. Determine needs of individual management agencies (Wildlife, Parks, etc.) and distribute education and informational materials. Begin landowner contact efforts. Hire short-term workers to begin in late April or early May.

Plan and coordinate efforts to survey critical piping plover habitat in Illinois and begin these efforts in mid April.

**MAY-SEP** Continue analyses of species concentrations.

Conduct field surveys for threatened and endangered plants at potential species concentration areas that need supplemental information. Surveys will include information on locations, abundance, quality of occurrence and potential threats.

Begin plover breeding pair surveys in early May, and conduct monitoring and protection activities from the time of egg laying until young have fledged in late July or early August. Facilitate smooth operation of monitoring and volunteer stewardship efforts. Continue landowner contact efforts.

Continue surveying critical piping plover habitat in Illinois and, if applicable, protect any nesting sites.

Prepare and submit annual report to USFWS.

## Year Two

**OCT-JAN** Summarize results of field surveys and enter data into the MNFI database. Complete analyses of species concentrations and begin summarizing results into a report that will also discuss site-specific land ownership, threats, and potential conservation strategies at significant species congregation locations. Begin the process of reviewing species concentration locations to select a location(s) for a pilot project.

Evaluate and modify last season's piping plover survey, monitoring, and protection protocols; information materials; volunteer lists and materials and outreach efforts. Meet with piping plover recovery group to decide on priorities for upcoming season. Review the results of the species concentration analysis with the research group and reevaluate efforts to incorporate a multi-species approach. Prepare materials for landowner contact.

FEB-APR Continue work on the species concentrations analyses summary. Select location for pilot project. Begin developing strategies and contacting relevant public agency(s). Begin developing strategies for private lands aspect of pilot project.

Begin contacting potential piping plover program volunteers and develop schedules for volunteer stewards and monitors. Meet with Michigan plover recovery group to map work strategies for upcoming field season. Determine needs of individual management agencies (Wildlife, Parks, etc.) and distribute education and informational materials. Begin landowner contact efforts. Hire short-term workers to begin in late April or early May.

MAY-SEP Complete the report summarizing the species concentrations analyses. Begin implementation of pilot project. Begin meeting with public agency(s) to develop a site conservation plan. Begin contacting private entity(s) to discuss a plan to protect Great Lakes shoreline threatened and endangered species on private land.

Begin plover breeding pair surveys in early May, and conduct monitoring and protection activities from the time of egg laying until young have fledged in late July or early August. Facilitate smooth operation of monitoring and volunteer stewardship efforts. Continue landowner contact efforts.

Prepare and submit annual report to USFWS.

### Year three

OCT-JAN Continue pilot project to develop a site conservation plan(s) and associated agreements to protect Great Lakes shoreline threatened and endangered species with public and private partnerships.

Evaluate and modify last season's piping plover survey, monitoring, and protection protocols; information materials; volunteer lists and materials and outreach efforts. Meet with piping plover recovery group to decide on priorities for upcoming season. Review the final report for the Great Lakes shoreline species concentrations with the research group and reevaluate efforts to incorporate a multi-species approach. Prepare materials for landowner contact.

FEB-APR Continue work on pilot project to develop site conservation plan(s) and associated agreements to protect Great Lakes shoreline threatened and endangered species with public and private partnerships.

Begin contacting potential piping plover program volunteers and develop schedules for volunteer stewards and monitors. Meet with Michigan plover recovery group to map work strategies for upcoming field season. Determine needs of individual management agencies (Wildlife, Parks, etc.) and distribute education and informational materials. Begin landowner contact efforts. Hire short-term workers to begin in late April or early May.

**MAY-SEP** Complete site conservation plan(s) and associated agreements to protect Great Lakes shoreline threatened and endangered species with public and private partnerships. Develop a summary of lessons learned from the pilot project.

Begin plover breeding pair surveys in early May, and conduct monitoring and protection activities from the time of egg laying until young have fledged in late July or early August. Facilitate smooth operation of monitoring and volunteer stewardship efforts. Continue landowner contact efforts.

Prepare and submit annual report to USFWS.

Protocols and exact timing employed may change as new information becomes available and is critically evaluated. Some activities will occur on an as-needed basis, such as environmental reviews, and opportunities to distribute educational materials, engage in public outreach, and incorporate project results and other recovery efforts in public speaking events.

#### **Roles and Responsibilities:**

This will be a coordinated effort between the MI Wildlife Division's Natural Heritage Program, the Michigan Natural Features Inventory (MNFI)—a partnership program administered by Michigan State University but incorporated within Michigan's Natural Heritage Program, and the many partners that have been integral to the piping plover program.

John Paskus of MNFI is the principal investigator for the effort to identify concentrations of threatened and endangered species. Other MNFI staff ecologists, botanists, and zoologists may also be involved with various project components.

MNFI and the MI Wildlife Division will work cooperatively to develop and implement a pilot project to manage and protect a species concentration area on both private and public land. MNFI and the MI Wildlife Division will also work cooperatively, and with other plover project partners, to integrate multi-species protection with the piping plover program.

The Michigan DNR Wildlife Division will coordinate plover protection and management efforts with the U.S. Fish and Wildlife Service East Lansing Field Office, the National Park Service (NPS), the U.S. Forest Service and others. On state land, the Wildlife Division will hire staff and coordinate efforts with the Michigan Parks and Recreation Division. The Illinois DNR will work cooperatively with the U.S. Fish and Wildlife Service Barrington Field Office and with a network of volunteers and organizations (e.g. Audubon Society).

#### **LOCATION:**

The assessment of threatened and endangered species and associated planning will cover all Great Lakes shoreline areas in Michigan.

The pilot project will be at a location that contains a significant number of threatened and endangered species and provides an opportunity for management and protection that will be representative of what will be required in other such focal areas.



Site-level protection of piping plover will occur at active and potential nesting areas along the Lower Peninsula shoreline, on Lake Michigan islands, along the shorelines of Lakes Superior and Michigan in the eastern Upper Peninsula, along the northern Lake Huron shoreline, and along the Lake Michigan shoreline in Illinois. Site-level protection of significant species concentrations may occur at many of these locations.

**ESTIMATED COST:**

Great Lakes Shoreline Prioritization			
	FY 04 monies FY 05 tasks	FY 05 monies FY 06 tasks	FY 06 monies FY 07 tasks
<b>Michigan</b>			
<b>Salaries</b>			
Field surveys	\$ 18,500.00	\$ 18,500.00	\$18,600.00
Short-term workers (2)	\$ 6,600.00	\$ 6,600.00	\$6,650.00
Planning, meetings, and training	\$ 5,320.00	\$ 11,090.00	\$17,531.00
Report preparation	\$ 750.00	\$ 750.00	\$1,250.00
Subtotal	\$ 31,170.00	\$ 36,940.00	\$44,031.00
<b>Contractual</b>	\$ 26,707.00	\$ 27,589.00	\$ 21,802.00
<b>Travel</b>			
Vehicle mileage	\$ 5,000.00	\$ 5,620.00	\$ 6,550.00
Lodging	\$ 2,350.00	\$ 2,950.00	\$ 3,650.00
Meals	\$ 770.00	\$ 1,290.00	\$ 1,750.00
Subtotal	\$ 8,120.00	\$ 9,860.00	\$ 11,950.00
<b>Supplies</b>			
Signs	\$ 350.00	\$ 650.00	\$ 650.00
Informational materials	\$ 500.00	\$ 500.00	\$ 500.00
Postage	\$ 200.00	\$ 250.00	\$ 250.00
Subtotal	\$ 1,050.00	\$ 1,400.00	\$ 1,400.00
<b>Subtotal</b>	\$ 67,047.00 ✓	\$ 75,789.00 ✓	\$ 79,183.00 ✓
<b>Illinois</b>			
<b>Contractual</b>	\$ 8,000.00		
<b>Subtotal</b>	\$ 8,000.00	\$ -	\$ -
<b>Total</b>	\$ 75,047.00	\$ 75,789.00	\$ 79,183.00
<b>Federal Share 75%</b>	\$ 56,285.25	\$ 56,841.75	\$ 59,387.00

= 229,019

229,868

Partial funding will be considered, but will result in reducing the scope of the project. Development of Great Lakes shoreline areas continues at an alarming rate. Prioritizing areas for more specific and proactive conservation efforts based on concentrations of threatened and endangered species would be a much more effective strategy for protecting these species than previous and current efforts. Plover nest monitoring and protection are critical components of the project. The population has increased from a low of 12 pairs in 1990 to 50 pairs in 2003. Chick productivity and survival will be extremely low if production, monitoring, and protection of the nests are not done and will seriously set back the recovery of the Great Lakes plover population.

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